

# Survey Manual for White Pine Canker

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## INTRODUCTION

White pine canker recently has been located in one white pine plantation in Compartment 101 near Doanville, Ohio (Athens Ranger District, Wayne-Hoosier National Forest). Presently, we have no knowledge of this disease causing mortality of white pine, or it having been reported previously on the Athens Ranger District. The Doanville white pine plantation has small pockets of necrotic (red topped) trees adjacent to dead trees (Figure 1). The white pine canker was found infecting healthy trees adjacent to necrotic trees. More information is needed to determine the distribution of the canker in white pine plantations on the Athens Ranger District, but the only way to find the disease is to cut healthy trees and examine their branches. In order to avoid unnecessary destructive sampling of white pine trees, the best time to survey for this disease is when a thinning has been performed in a white pine stand. Therefore, this manual presents a survey procedure to be used by National Forest personnel to detect white pine canker wherever it occurs.

## SURVEY PROCEDURE

The tops of ten harvested trees should be examined for cankering within two weeks after a white pine plantation has been thinned. Only branches with green foliage should be examined for the canker, but the branches with green foliage can be selected from a branch pile which is adjacent to a necrotic, or dead branch pile. Selecting branches with green foliage adjacent to piles of necrotic or dead branches will increase the likelihood of the observer finding the disease. Care should be taken to examine the tops of ten harvested trees throughout the plantation and not only in one location.

White pine canker can be found on branch samples with heavy resin deposits, and/or with necrotic tipped foliage (Figures 2 and 3). A sharp knife should be used to peel the bark and observe patches of live and dead (brown) wood. There will be a distinct zone between the live and dead wood (Figure 4), but occasionally there may not be a distinct zonation (Figure 3). Using a 10X hand lens, the observer may see dark structures emerging through the resin and from beneath the bark. The dark structures are called fruiting bodies (Figures 2 and 4) and are the means by which fungi reproduce themselves. The observer should favor examining branch piles where there is a heavy resin deposit on the branches, or the foliage has necrotic tips. Frequently, the observer will not see heavy resin deposits, but the white pine canker may be present.

Branches with no, or little resin, which are infected with white pine canker will have a discolored patch on the bark. The discolored patch will be lighter in color (red or orange tint) than the dark (black) healthy white pine bark. Careful observation between the light (infected) and dark (healthy) bark will

reveal the stem is slightly sunken. The edge of the sunken area is called the canker margin (Figure 5-7). Cutting beneath the bark at the canker margin, the observer will see where the healthy wood meets the dead wood (Figures 6-8). Finally, within the center, or older portion, of the canker there may be fruiting bodies which can be seen with a 10X hand lens (Figures 5-7).

If the observer believes they have found the white pine canker, or are unsure of their observations, than three to ten branch samples should be collected and sent to Forest Pest Management, Morgantown, WV. The whole branch does not need to be sent, but only the portion of the branch with the canker. The following information should be sent to Forest Pest Management after a plantation has been examined:

1. Date of the examination
2. Observer's name
3. Compartment number (please include a copy of the compartment map)
4. Stand number
5. Number of acres
6. Date the thinning was finished
7. Number of branches examined which are suspected of having white pine canker (be sure to include samples if the canker is found).

The information collected for each stand examined for white pine canker, and branch samples collected, should be sent to:

Plant Pathologist  
Northeastern Area State and Private Forestry  
USDA Forest Service  
180 Canfield Street - P.O. Box 4360  
Morgantown, West Virginia 26505

The Plant Pathologist for Forest Pest Management will confirm if White pine canker has been collected and report the results in a memo to the Athens District Ranger.



## **FIGURE 1.**

The above white pine stand is near Ooanville, Ohio, (C101). The infection center has necrotic (red topped) trees adjacent to dead trees. The best way to find the white pine canker is to cut a live tree adjacent to a necrotic tree and examine the upper crown for the canker symptoms.





**FIGURE 2.**

- A). Needles with necrosis at tips.
- B). Fruiting bodies.
- C). Resin.



FIGURE 3.

- A). Needles with necrosis at tips.
- B). Live wood.
- C). Dead wood.





FIGURE 4.

- A) Fruiting bodies
- B) Live wood
- C) Dead wood



FIGURE 5.

- A). Fruiting bodies.
- B). Resin.
- C). Canker margin.





FIGURE 6.

- A) . Canker margin.
- B) . Fruiting bodies.
- C) . Dead wood.





FIGURE 7.

- A). Canker margin.
- B). Fruiting bodies.
- C). Dead wood.



FIGURE 8.

- A) . Dead wood.
- B) . Canker margin.
- C) . Live wood.